FIGURE 1
(Prior Art)

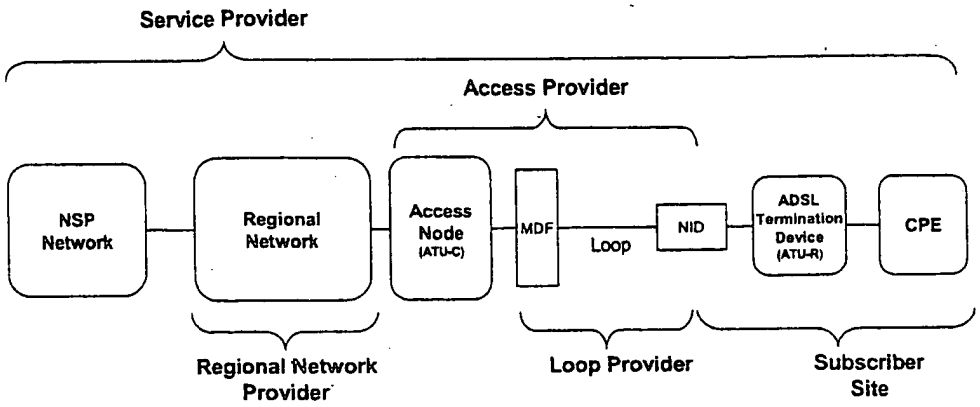


FIGURE 2
(Prior Art)

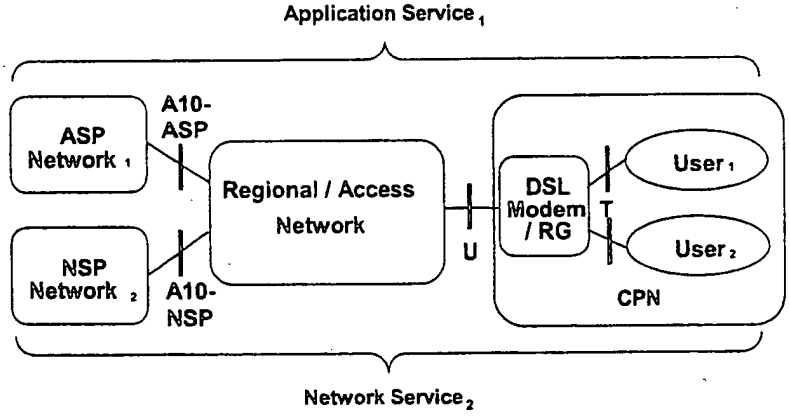


FIGURE 3
(Prior Art)

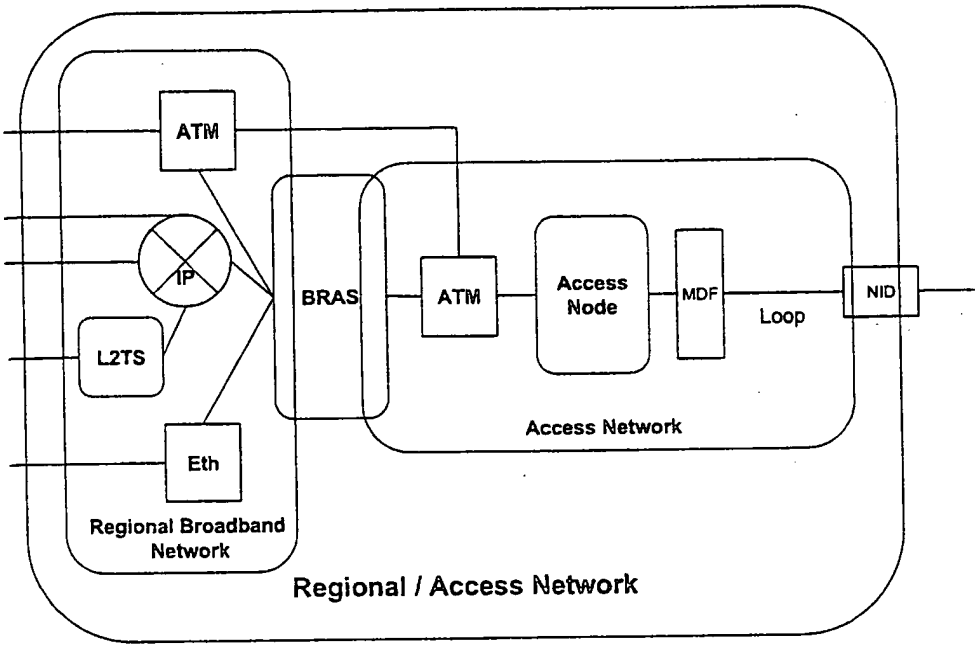


FIGURE 4
(Prior Art)

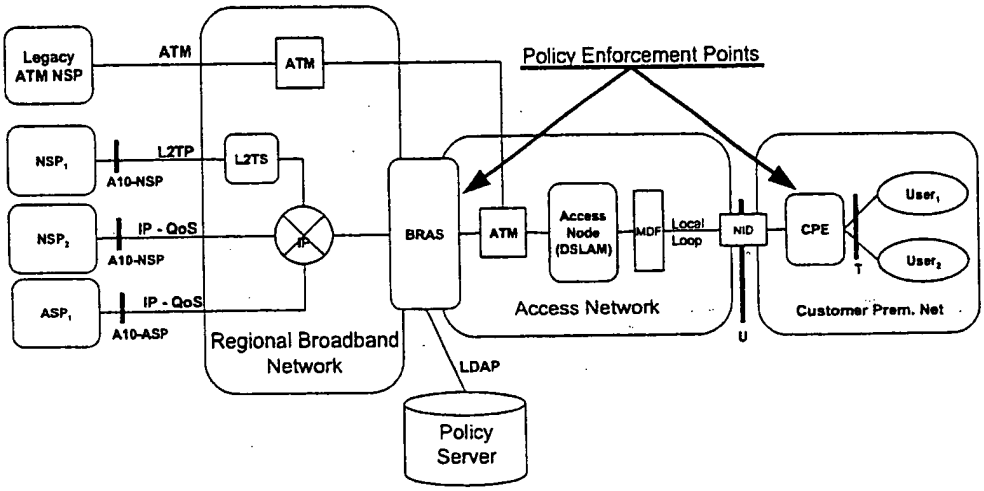


FIGURE 5

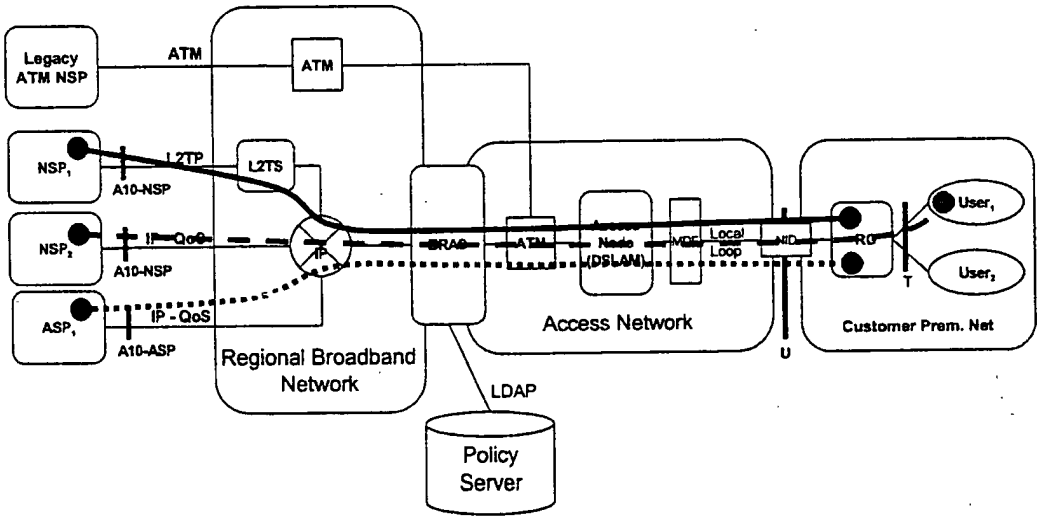


FIGURE 6

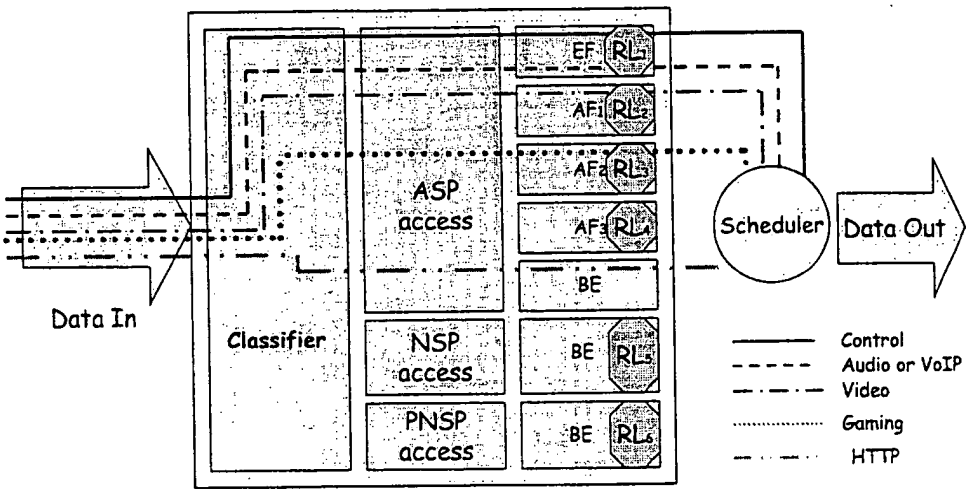


FIGURE 7

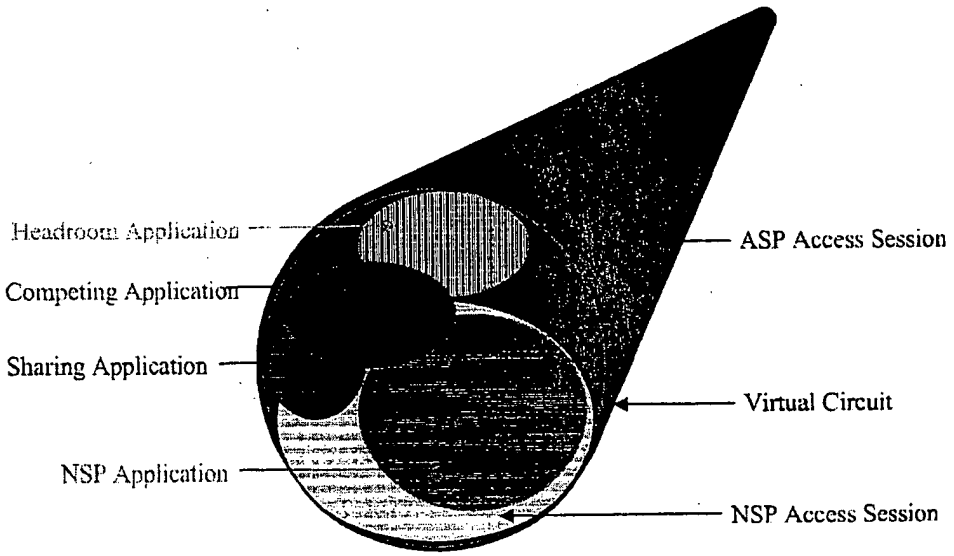
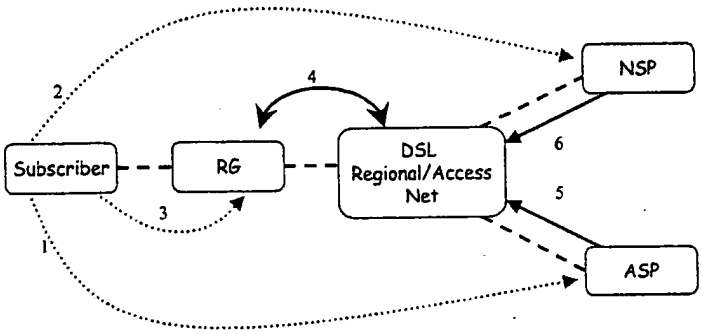


FIGURE 8



900

FIGURE 9

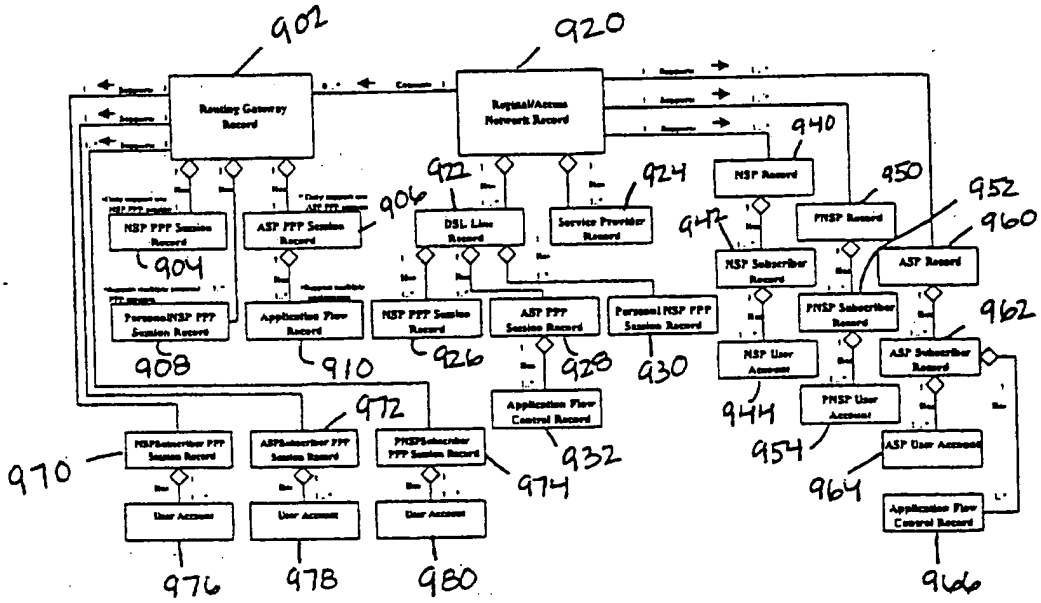

902
920
Routing Gateway Record
Regional Access Network Record
940
922
924
950
952
906
960
NSP PPP Session Record
ASP PPP Session Record
DSL Line Record
Service Provider Record
NSP Record
PNSP Record
ASP Record
904
NSP Subscriber Record
PNSP Subscriber Record
962
Personal NSP PPP Session Record
Application Flow Record
NSP PPP Session Record
ASP PPP Session Record
Personal NSP PPP Session Record
NSP User Account
ASP Subscriber Record
908
910
926
928
930
944
PNSP User Account
970
972
Application Flow Control Record
932
954
ASP User Account
964
974
User Account
User Account
User Account
Application Flow Control Record
976
978
980
966

FIGURE 10

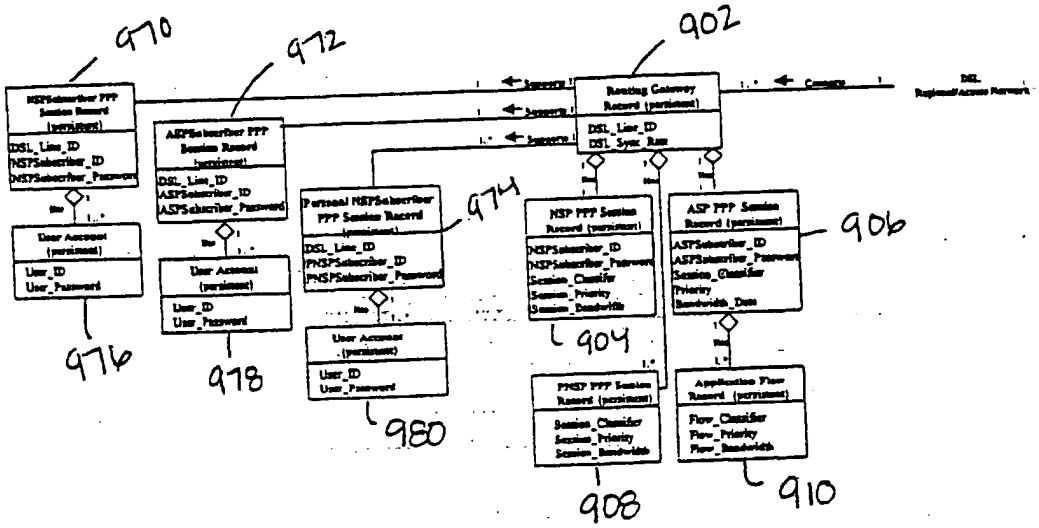


FIGURE 11

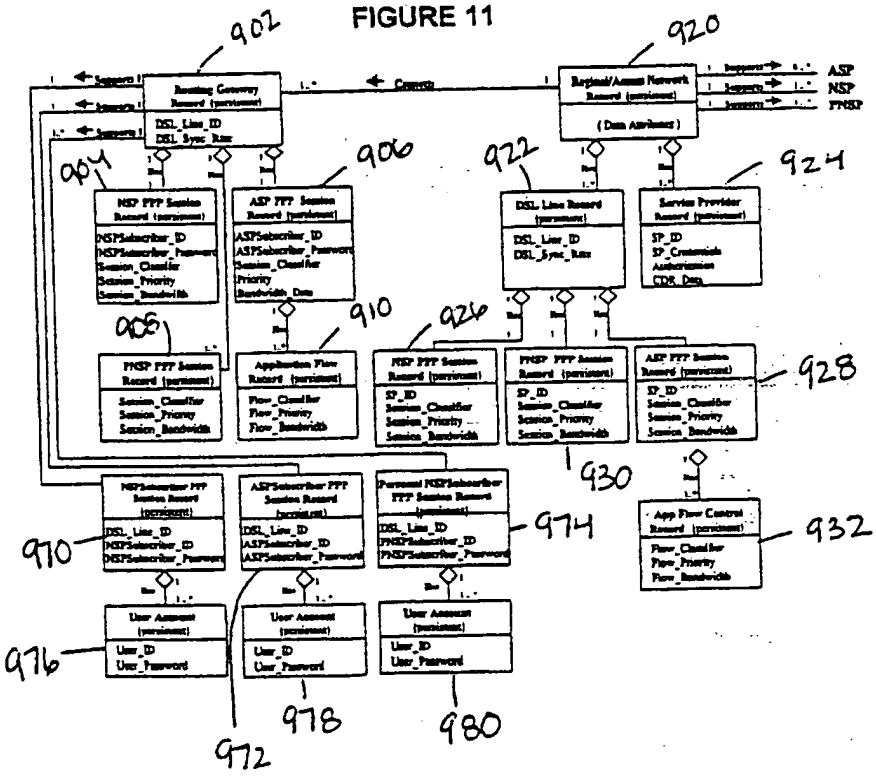

902
920
ASP
NSP
PNSP
904
906
922
924
905
910
926
928
930
932
910
974
976
978
980
972

FIGURE 12

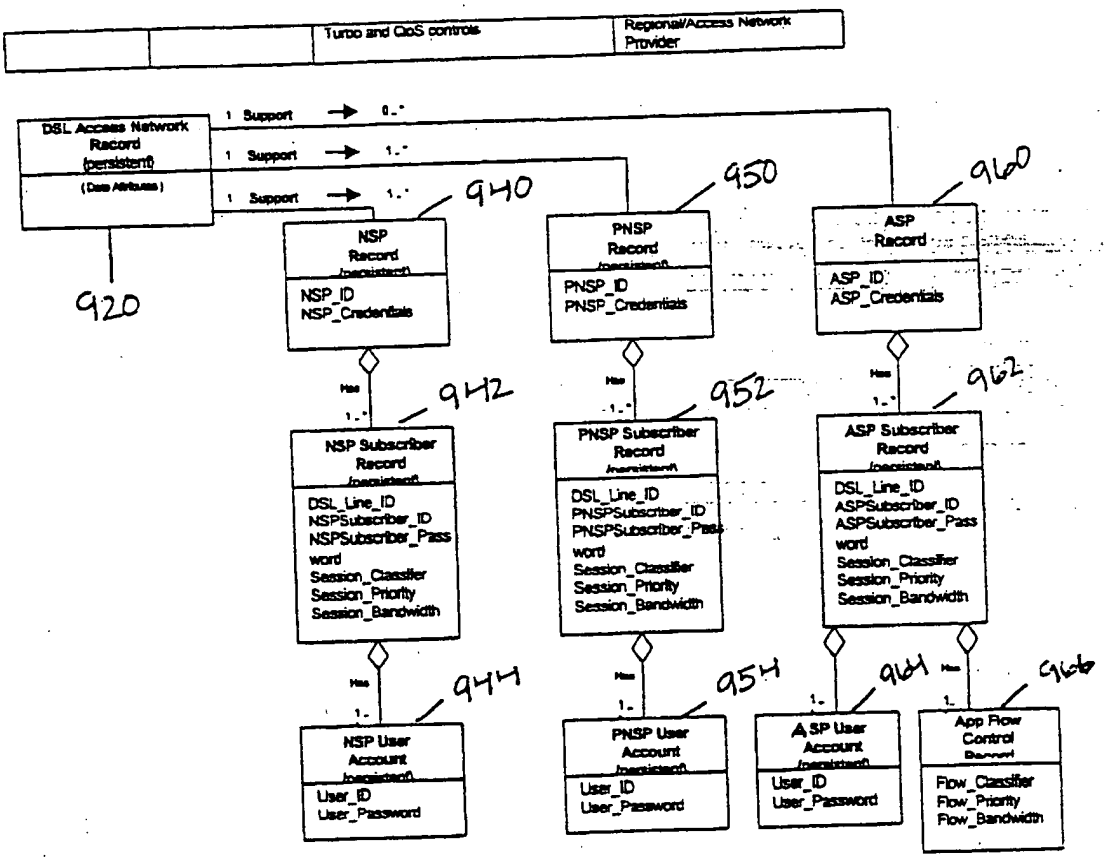

Turbo and QoS controls
Regional/Access Network Provider
DSL Access Network Record (persistent)
(Data Attributes)
1 Support 0..*
1 Support 1..*
1 Support 1..*
920
NSP Record (persistent)
NSP_ID
NSP_Credentials
940
PNSP Record (persistent)
PNSP_ID
PNSP_Credentials
950
ASP Record
ASP_ID
ASP_Credentials
960
Has 1..*
NSP Subscriber Record (persistent)
DSL_Line_ID
NSPSubscriber_ID
NSPSubscriber_Password
Session_Classifier
Session_Priority
Session_Bandwidth
942
PNSP Subscriber Record (persistent)
DSL_Line_ID
PNSPSubscriber_ID
PNSPSubscriber_Password
Session_Classifier
Session_Priority
Session_Bandwidth
952
ASP Subscriber Record (persistent)
DSL_Line_ID
ASPSubscriber_ID
ASPSubscriber_Password
Session_Classifier
Session_Priority
Session_Bandwidth
962
Has 1..
NSP User Account (persistent)
User_ID
User_Password
944
PNSP User Account (persistent)
User_ID
User_Password
954
ASP User Account (persistent)
User_ID
User_Password
964
App Flow Control Record
Flow_Classifier
Flow_Priority
Flow_Bandwidth
966

FIGURE 13

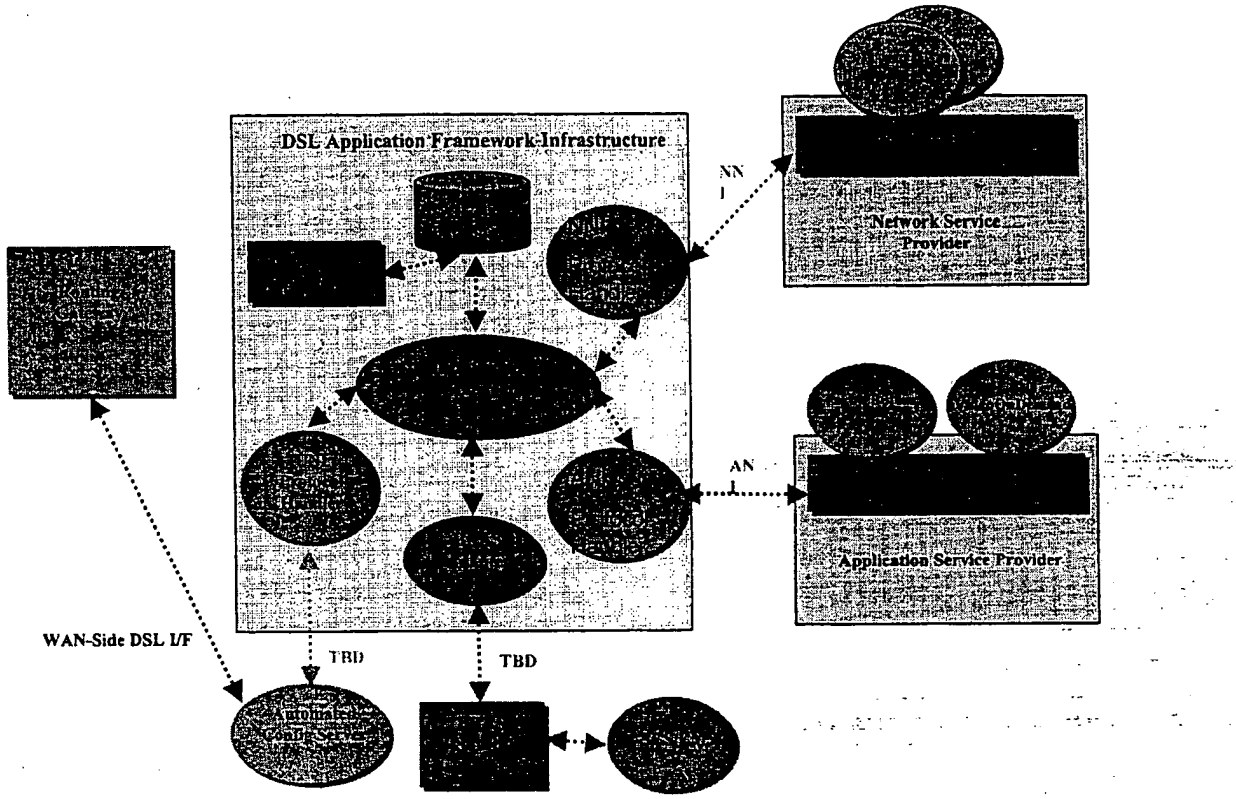

DSL Application Framework-Infrastructure
NN
I
Network Service
Provider
AN
I
Application Service Provider
WAN-Side DSL I/F
TBD
TBD

FIGURE 14

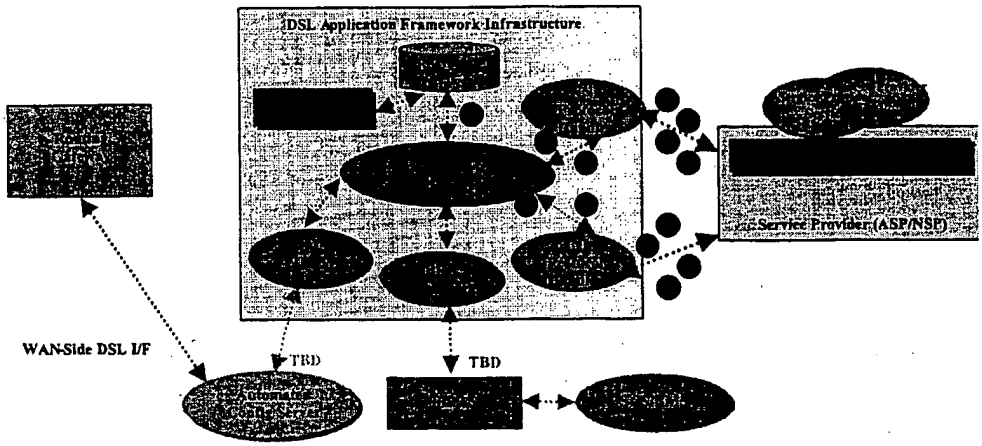


FIGURE 15

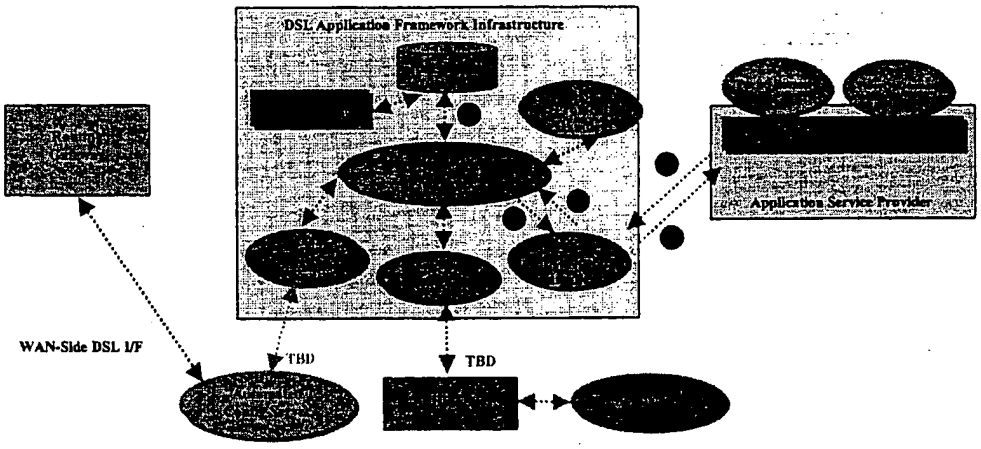


FIGURE 16

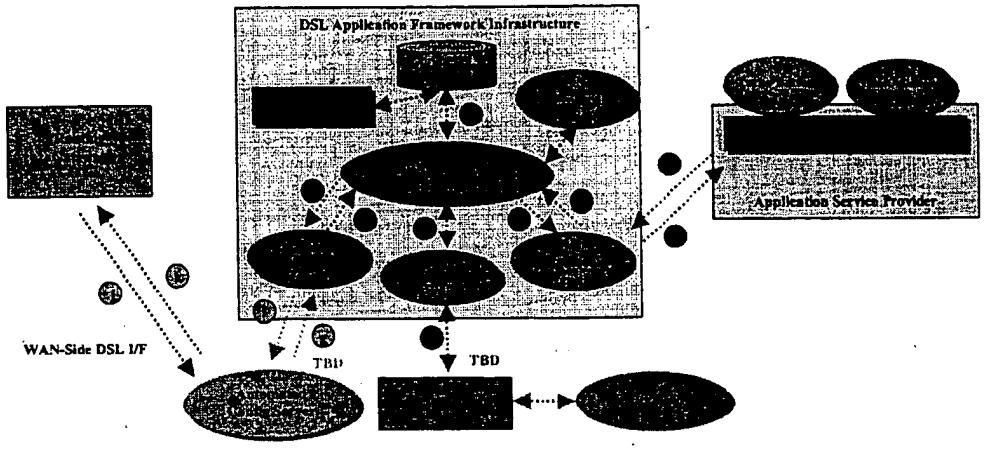


FIGURE 17

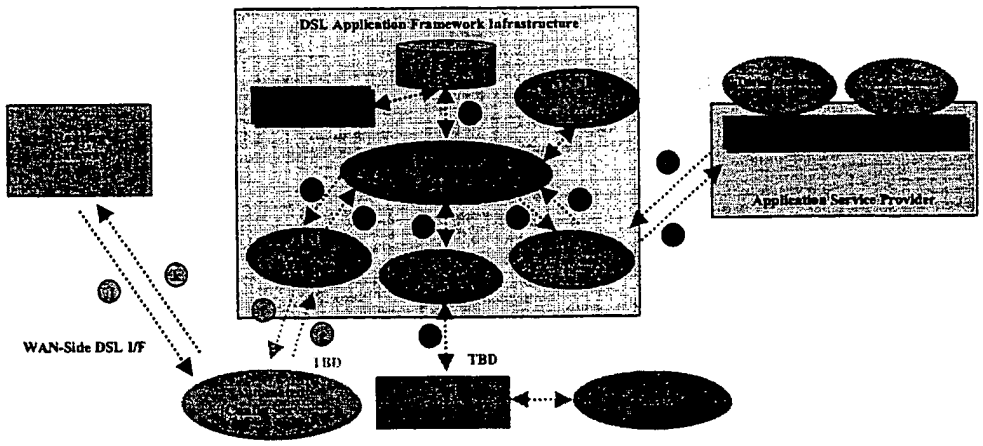


FIGURE 18

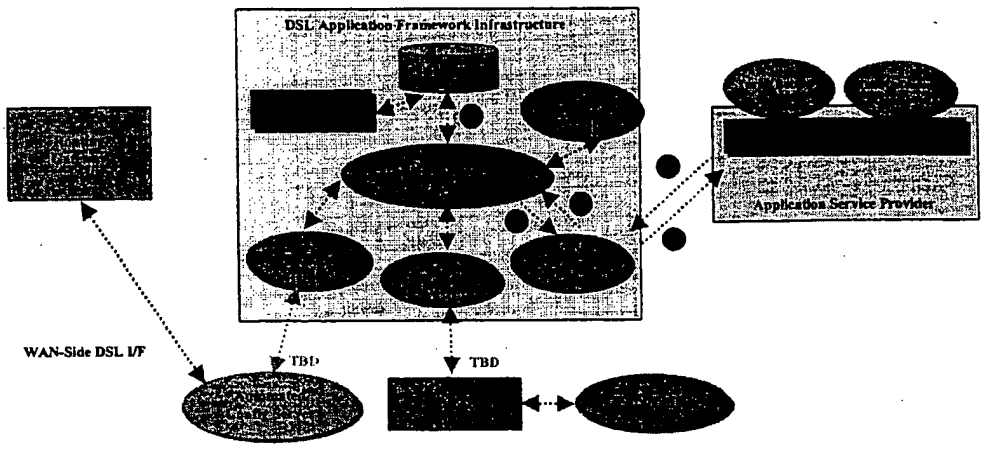


FIGURE 19

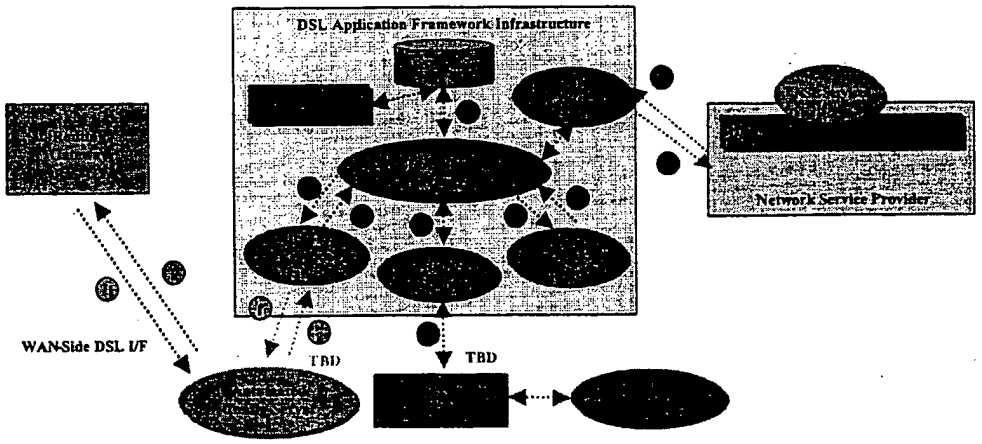


FIGURE 20

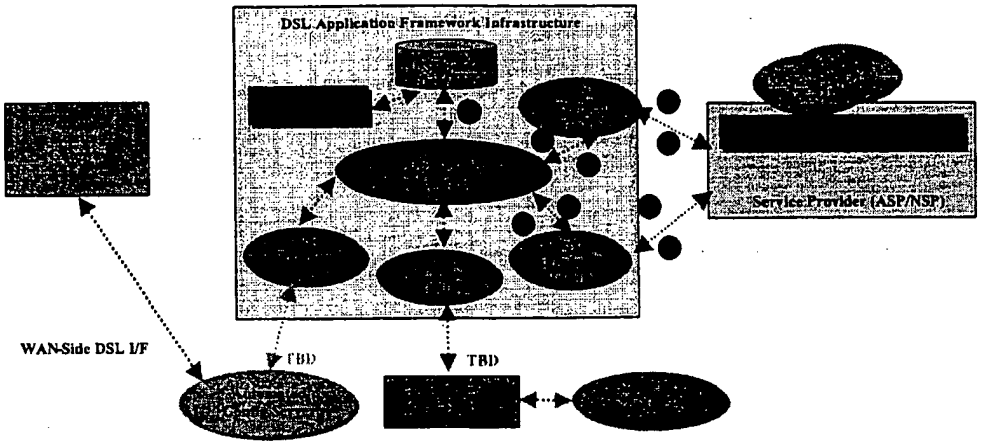


FIGURE 21

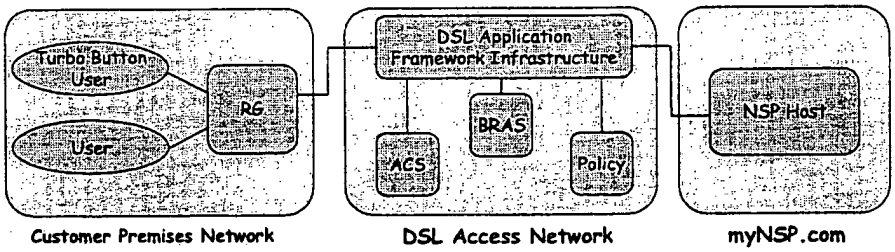


FIGURE 22

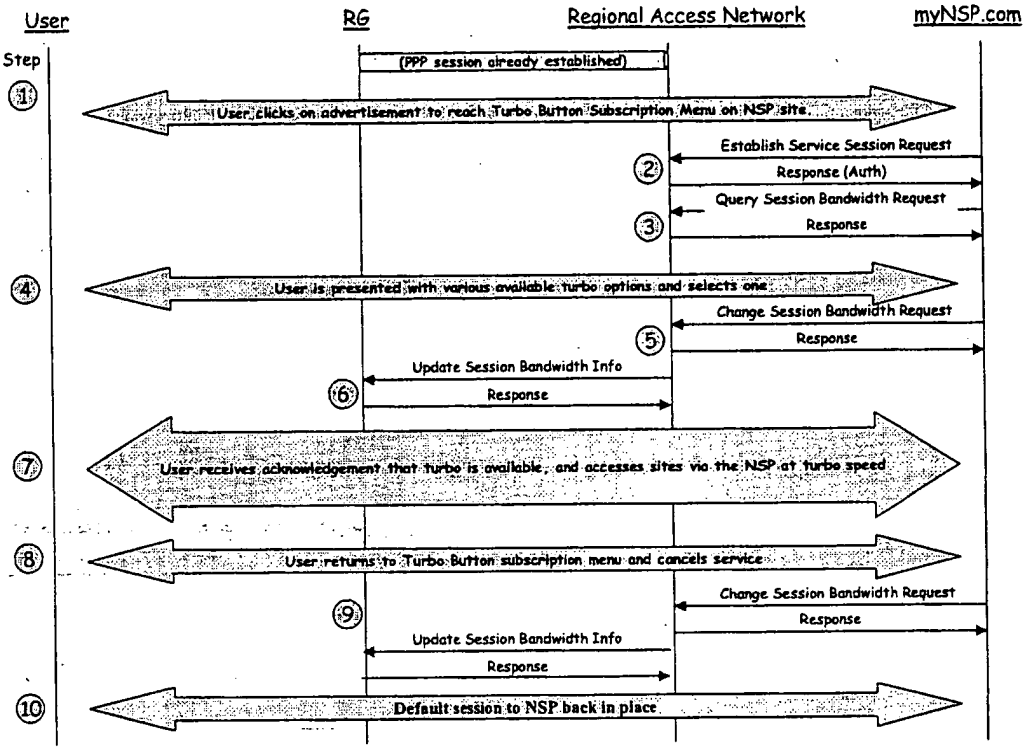

User
RG
Regional Access Network
myNSP.com
Step
(PPP session already established)
1
User clicks on advertisement to reach Turbo Button Subscription Menu on NSP site.
Establish Service Session Request
2
Response (Auth)
Query Session Bandwidth Request
3
Response
4
User is presented with various available turbo options and selects one
Change Session Bandwidth Request
5
Response
Update Session Bandwidth Info
6
Response
7
User receives acknowledgement that turbo is available, and accesses sites via the NSP at turbo speed
8
User returns to Turbo Button subscription menu and cancels service
Change Session Bandwidth Request
9
Response
Update Session Bandwidth Info
Response
10
Default session to NSP back in place

FIGURE 23

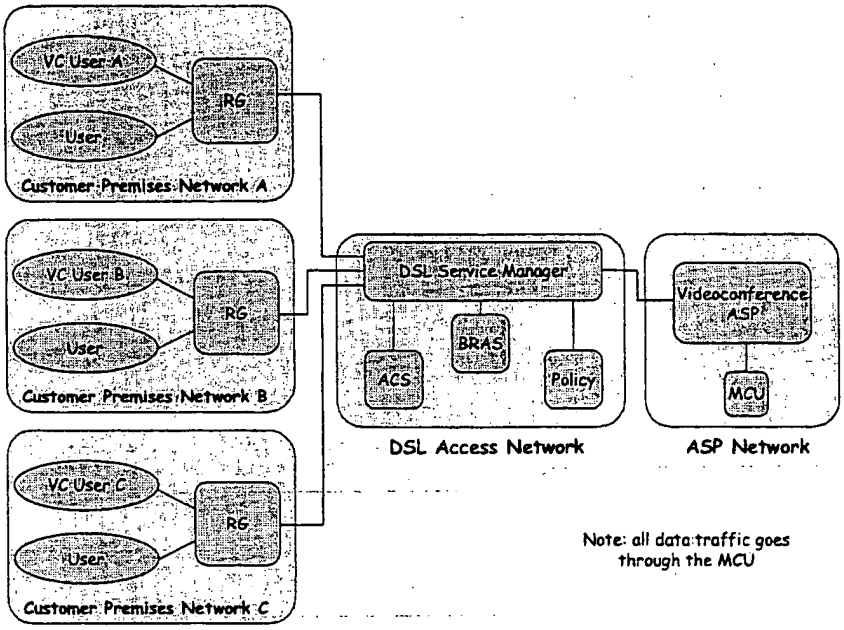

VC User A
User
RG
Customer Premises Network A
VC User B
User
RG
Customer Premises Network B
VC User C
User
RG
Customer Premises Network C
DSL Service Manager
ACS
BRAS
Policy
DSL Access Network
Videoconference ASP
MCU
ASP Network
Note: all data traffic goes through the MCU

FIGURE 24

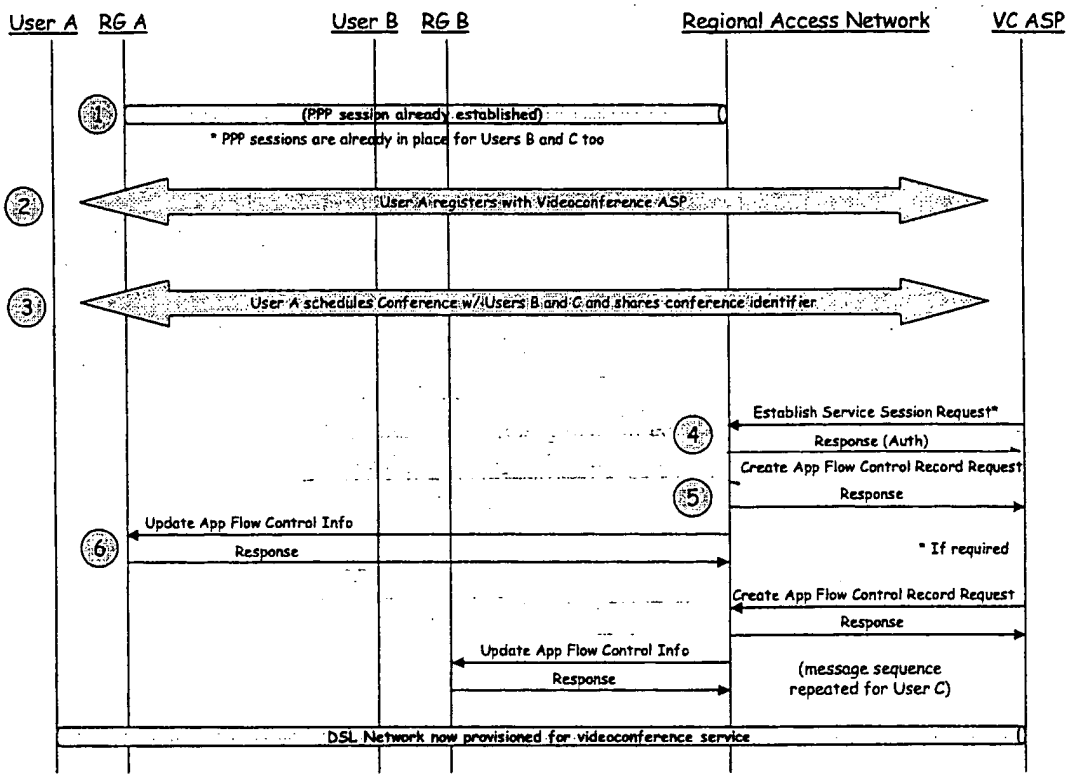

User A
RG A
User B
RG B
Regional Access Network
VC ASP
1
(PPP session already established)
* PPP sessions are already in place for Users B and C too
2
User A registers with Videoconference ASP
3
User A schedules Conference w/ Users B and C and shares conference identifier
4
Establish Service Session Request*
Response (Auth)
Create App Flow Control Record Request
Response
5
Update App Flow Control Info
Response
6
* If required
Create App Flow Control Record Request
Response
Update App Flow Control Info
Response
(message sequence repeated for User C)
DSL Network now provisioned for videoconference service

FIGURE 25

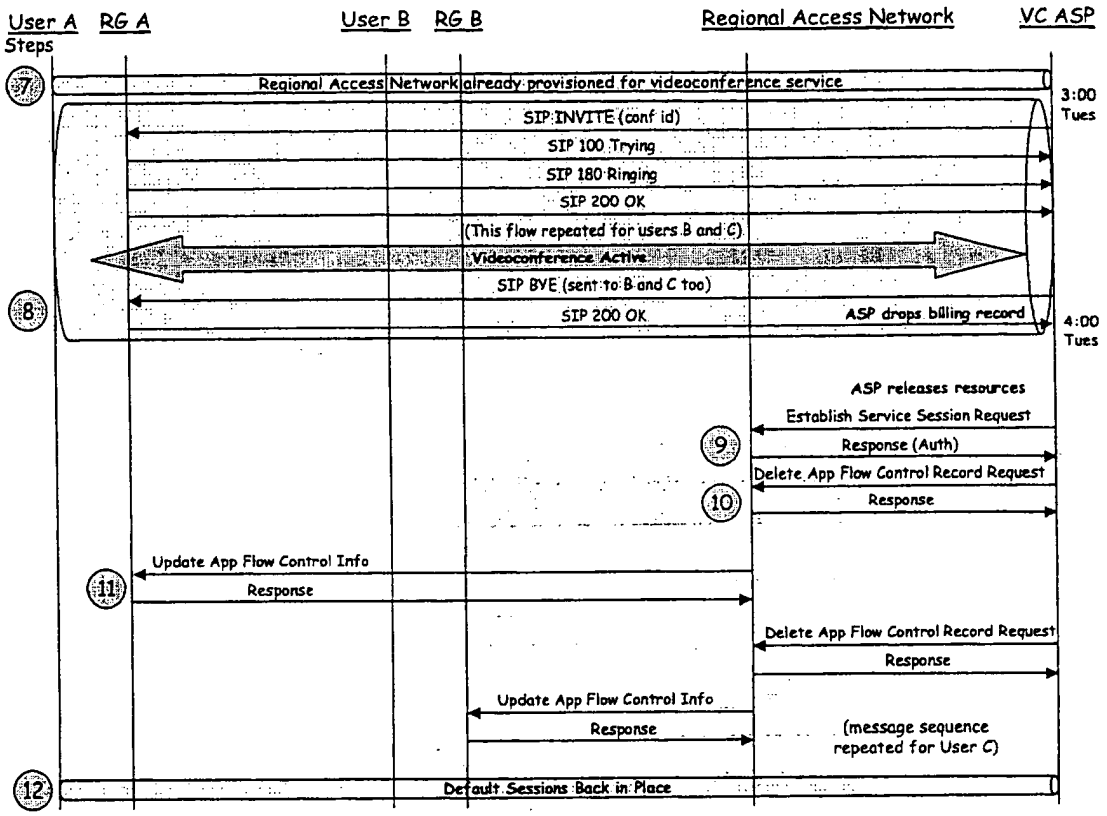

User A
RG A
User B
RG B
Regional Access Network
VC ASP
Steps
7
Regional Access Network already provisioned for videoconference service
3:00 Tues
SIP INVITE (conf id)
SIP 100 Trying
SIP 180 Ringing
SIP 200 OK
(This flow repeated for users B and C)
Videoconference Active
SIP BYE (sent to B and C too)
8
SIP 200 OK
ASP drops billing record
4:00 Tues
ASP releases resources
Establish Service Session Request
9
Response (Auth)
Delete App Flow Control Record Request
10
Response
Update App Flow Control Info
11
Response
Delete App Flow Control Record Request
Response
Update App Flow Control Info
Response
(message sequence repeated for User C)
12
Default Sessions Back in Place

FIGURE 26

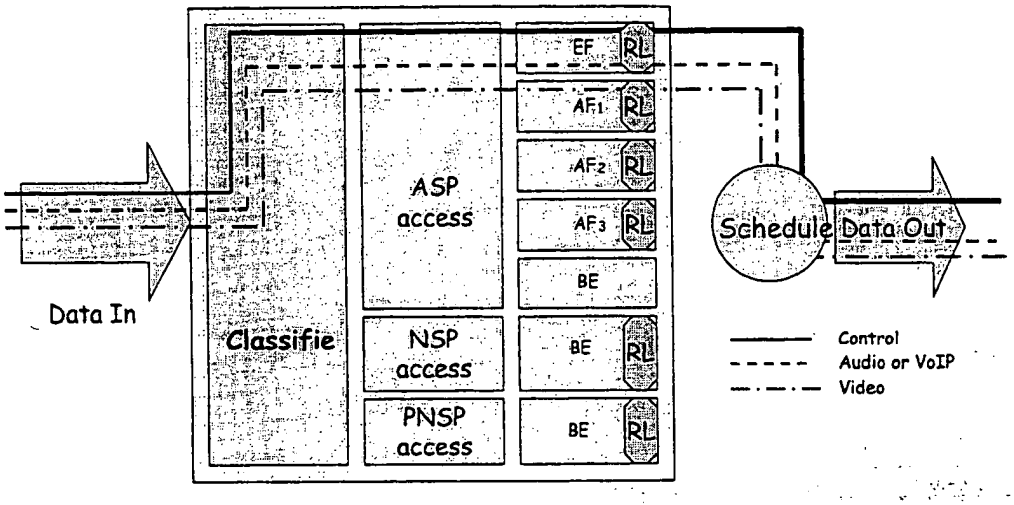

Data In
Classifie
ASP access
NSP access
PNSP access
EF
AF1
AF2
AF3
BE
BE
BE
RL
Schedule
Data Out
Control
Audio or VoIP
Video

FIGURE 27

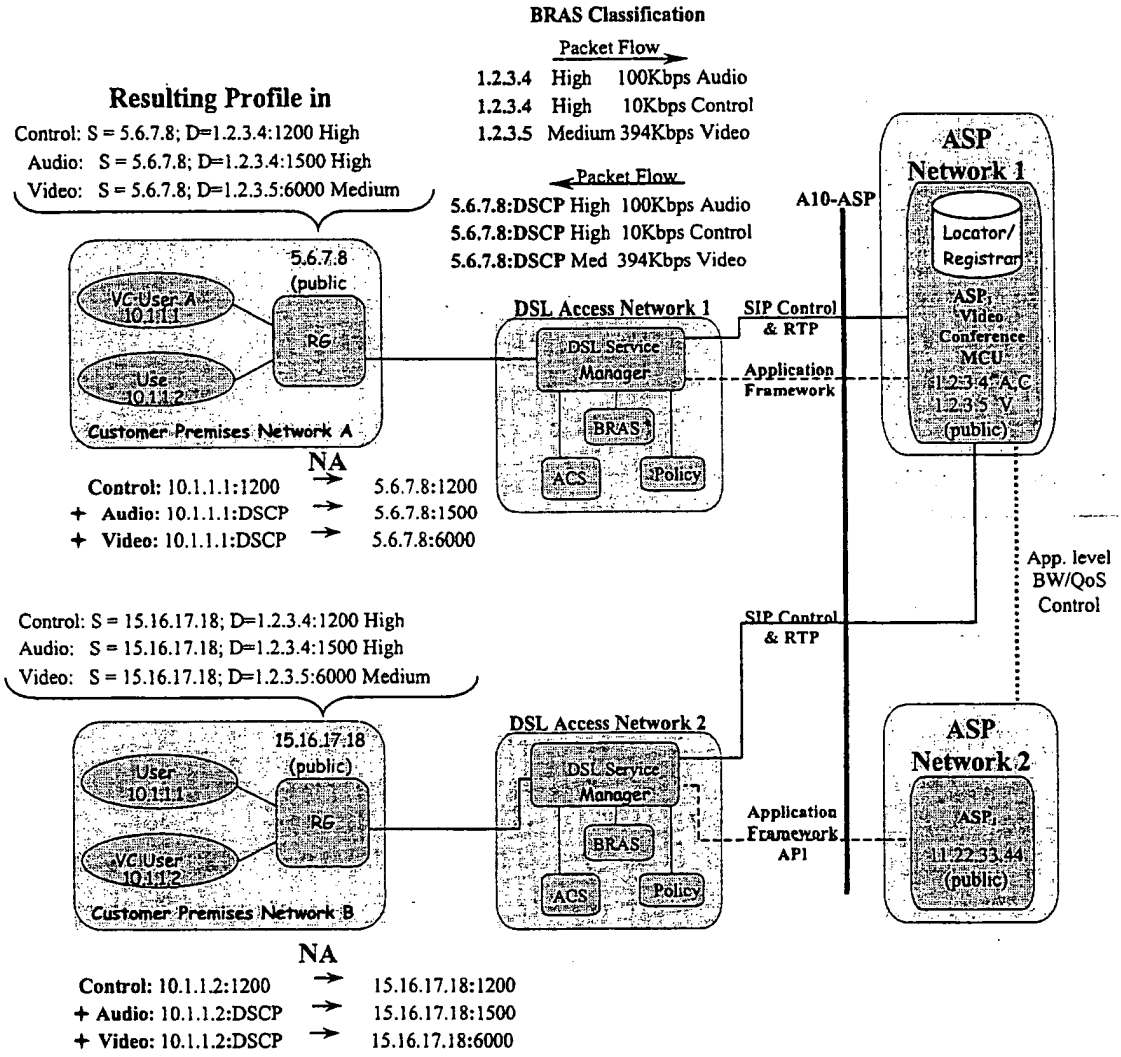

BRAS Classification
Packet Flow
1.2.3.4 High 100Kbps Audio
1.2.3.4 High 10Kbps Control
1.2.3.5 Medium 394Kbps Video
Packet Flow
5.6.7.8:DSCP High 100Kbps Audio
5.6.7.8:DSCP High 10Kbps Control
5.6.7.8:DSCP Med 394Kbps Video
Resulting Profile in
Control: S = 5.6.7.8; D=1.2.3.4:1200 High
Audio: S = 5.6.7.8; D=1.2.3.4:1500 High
Video: S = 5.6.7.8; D=1.2.3.5:6000 Medium
5.6.7.8 (public
VC User A 10.1.1.1
User 10.1.1.2
RG
Customer Premises Network A
NA
Control: 10.1.1.1:1200 → 5.6.7.8:1200
+ Audio: 10.1.1.1:DSCP → 5.6.7.8:1500
+ Video: 10.1.1.1:DSCP → 5.6.7.8:6000
DSL Access Network 1
DSL Service Manager
BRAS
ACS
Policy
SIP Control & RTP
Application Framework
A10-ASP
ASP Network 1
Locator/ Registrar
ASP1 Video Conference MCU
1.2.3.4 A/C
1.2.3.5 V
(public)
App. level BW/QoS Control
Control: S = 15.16.17.18; D=1.2.3.4:1200 High
Audio: S = 15.16.17.18; D=1.2.3.4:1500 High
Video: S = 15.16.17.18; D=1.2.3.5:6000 Medium
15.16.17.18 (public)
User 10.1.1.1
VC User 10.1.1.2
RG
Customer Premises Network B
NA
Control: 10.1.1.2:1200 → 15.16.17.18:1200
+ Audio: 10.1.1.2:DSCP → 15.16.17.18:1500
+ Video: 10.1.1.2:DSCP → 15.16.17.18:6000
DSL Access Network 2
DSL Service Manager
BRAS
ACS
Policy
SIP Control & RTP
Application Framework API
ASP Network 2
ASP2
11.22.33.44
(public)

FIGURE 28

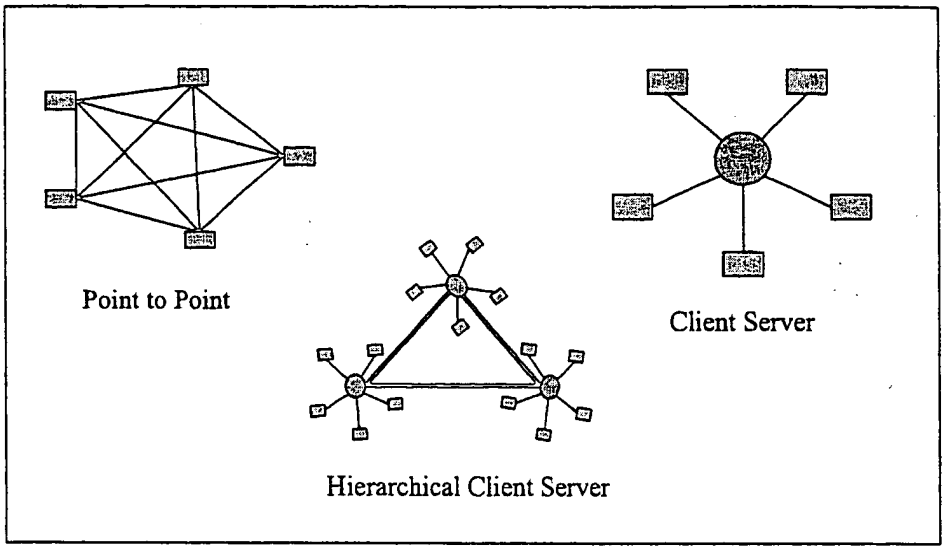


FIGURE 29

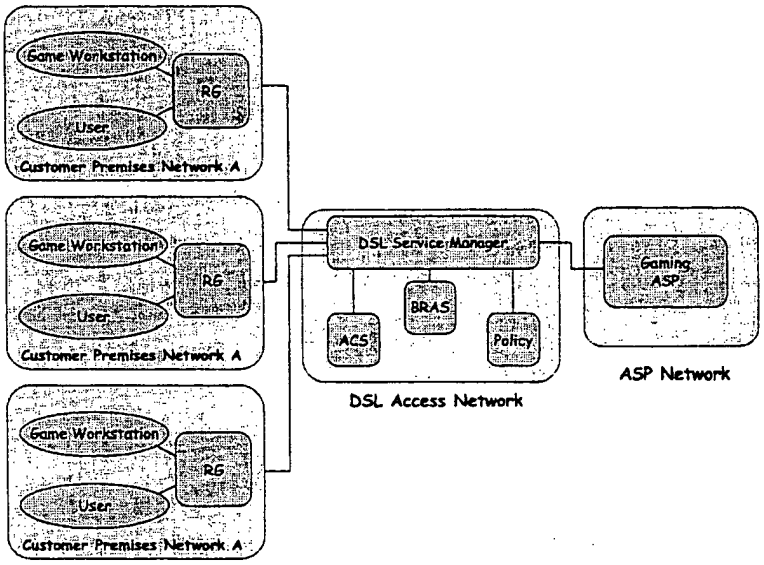

Game Workstation
RG
User
Customer Premises Network A
Game Workstation
RG
User
Customer Premises Network A
Game Workstation
RG
User
Customer Premises Network A
DSL Service Manager
ACS
BRAS
Policy
DSL Access Network
Gaming ASP
ASP Network

FIGURE 30

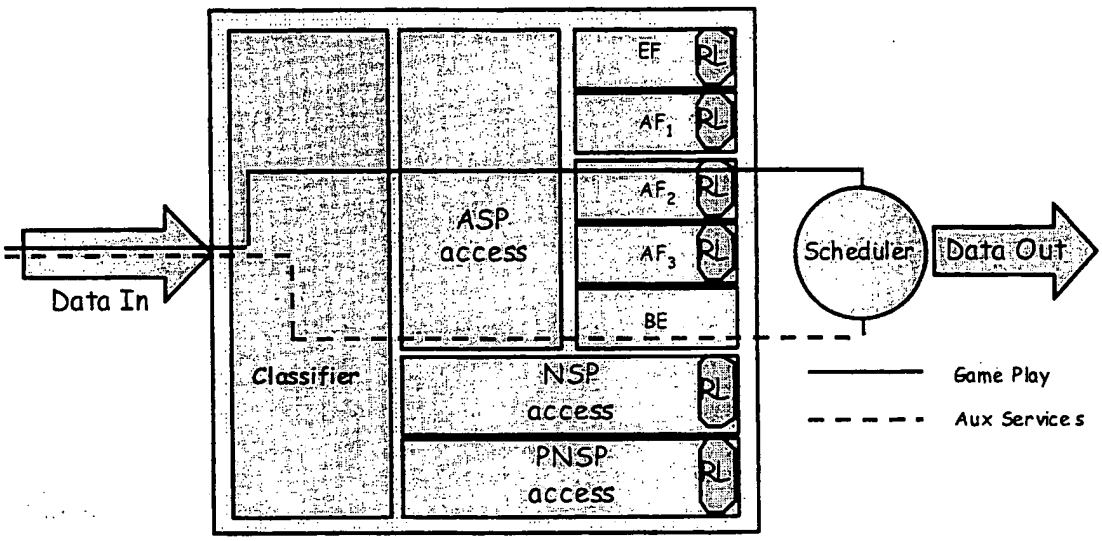

EF
RL
AF1
RL
AF2
RL
AF3
RL
BE
ASP
access
Scheduler
Data Out
Data In
Classifier
NSP
access
RL
PNSP
access
RL
Game Play
Aux Services

FIGURE 31

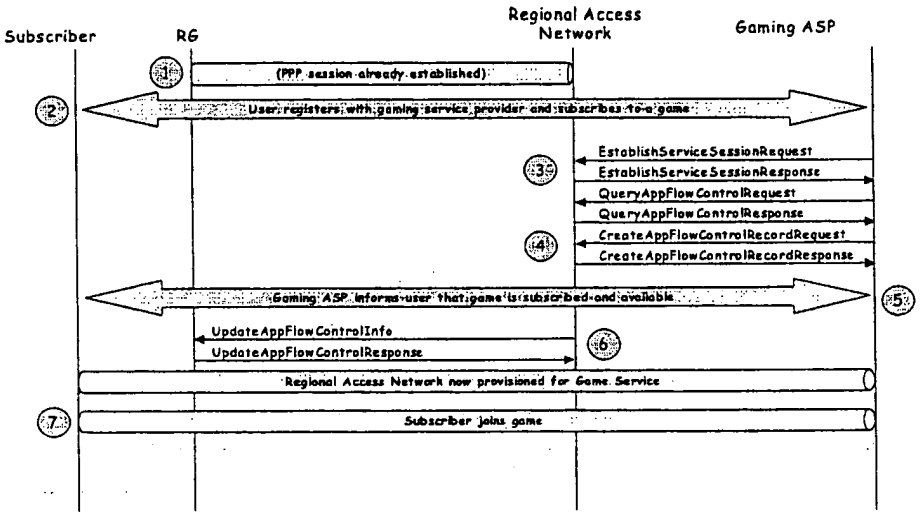

Subscriber
RG
Regional Access Network
Gaming ASP
1
(PPP session already established)
2
User registers with gaming service provider and subscribes to a game
3
EstablishServiceSessionRequest
EstablishServiceSessionResponse
QueryAppFlowControlRequest
QueryAppFlowControlResponse
4
CreateAppFlowControlRecordRequest
CreateAppFlowControlRecordResponse
5
Gaming ASP informs user that game is subscribed and available
6
UpdateAppFlowControlInfo
UpdateAppFlowControlResponse
Regional Access Network now provisioned for Game Service
7
Subscriber joins game

Figure 32

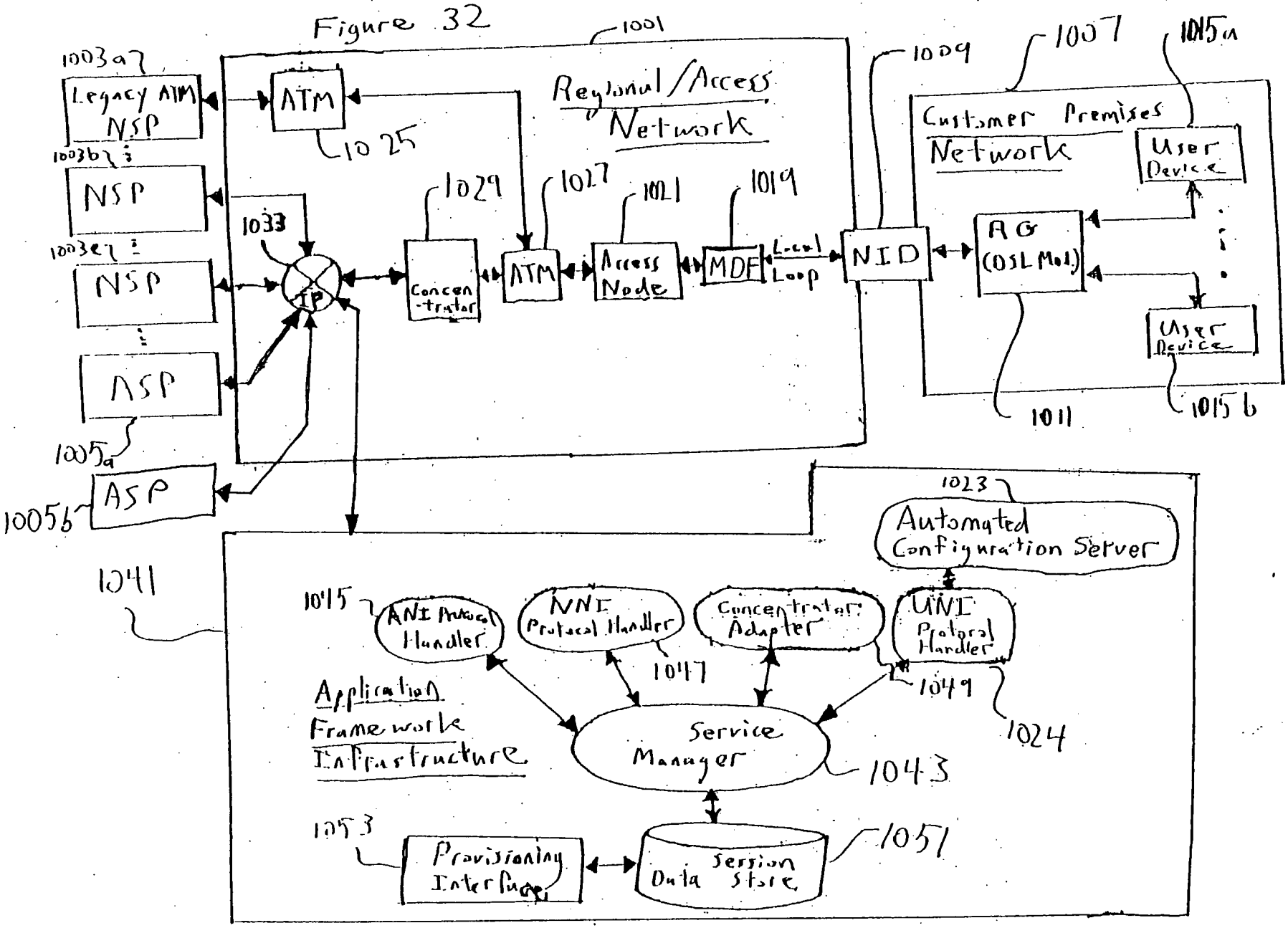

1001
Regional/Access Network
1003a
Legacy ATM NSP
1003b
NSP
1003c
NSP
NSP
1005a
ASP
1005b
ASP
ATM
1025
1033
IP
1029
Concentrator
1027
ATM
1021
Access Node
1019
MDF
Local Loop
NID
1009
1007
Customer Premises Network
1015a
User Device
AG (OSL Mod)
User Device
1011
1015b
1041
1023
Automated Configuration Server
1015
ANI Protocol Handler
NNI Protocol Handler
1017
Concentrator Adapter
UNI Protocol Handler
1049
1024
Application Framework Infrastructure
Service Manager
1043
1053
Provisioning Interface
Session Data Store
1051

Figure 33

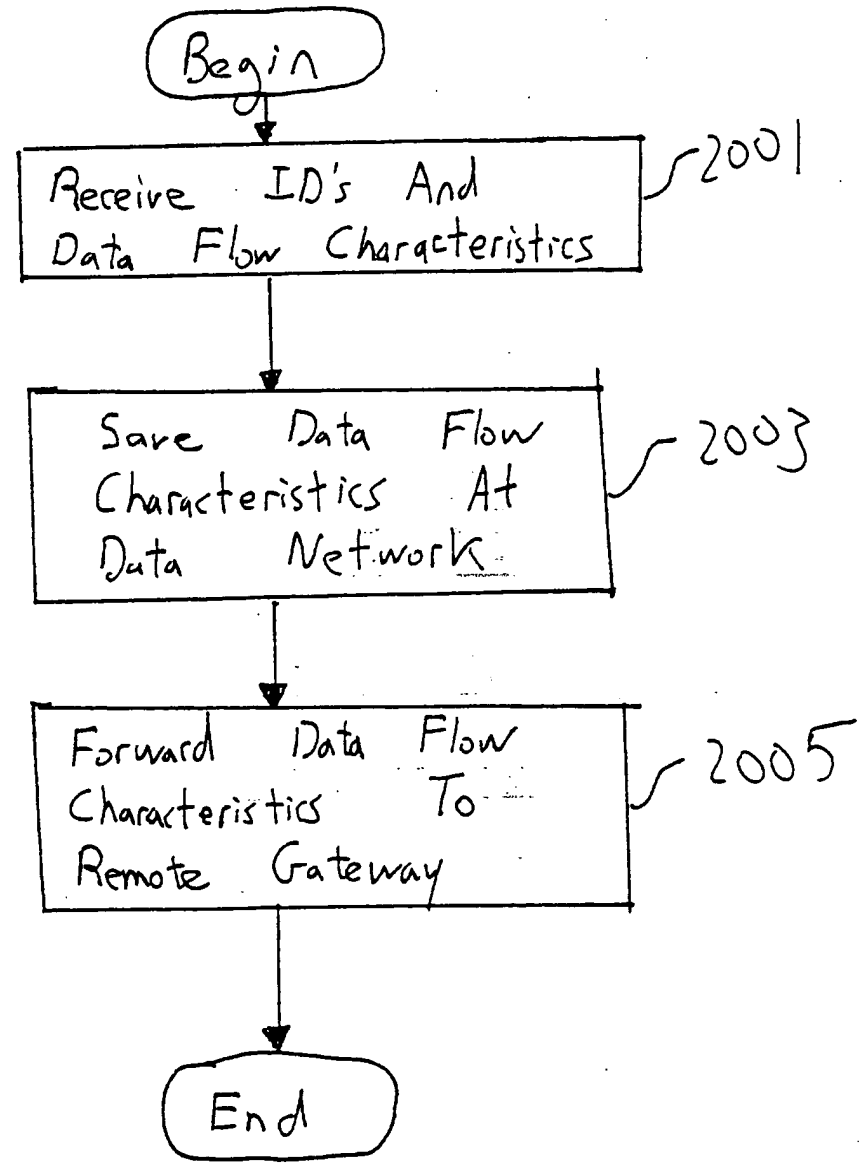

Begin
Receive ID's And Data Flow Characteristics
2001
Save Data Flow Characteristics At Data Network
2003
Forward Data Flow Characteristics To Remote Gateway
2005
End

Figure 34

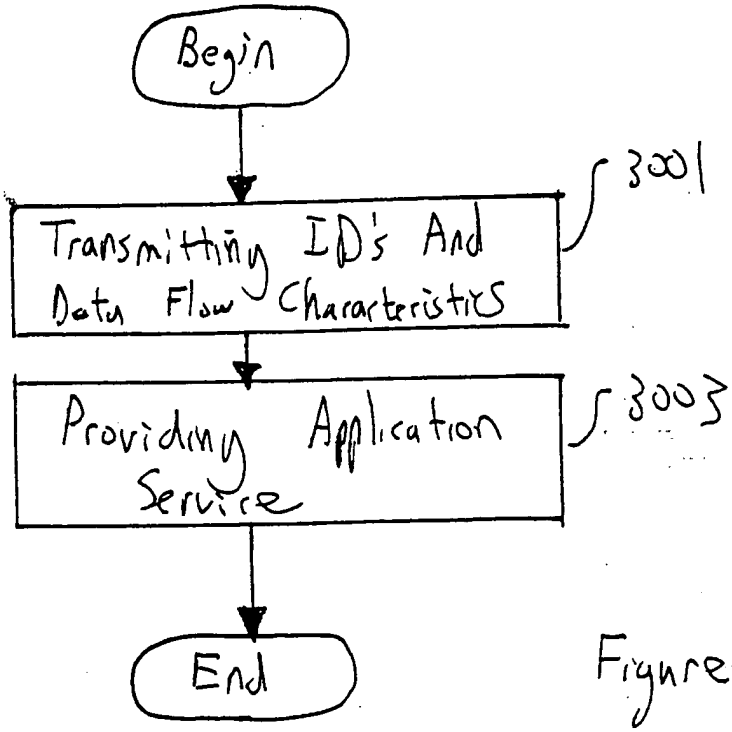
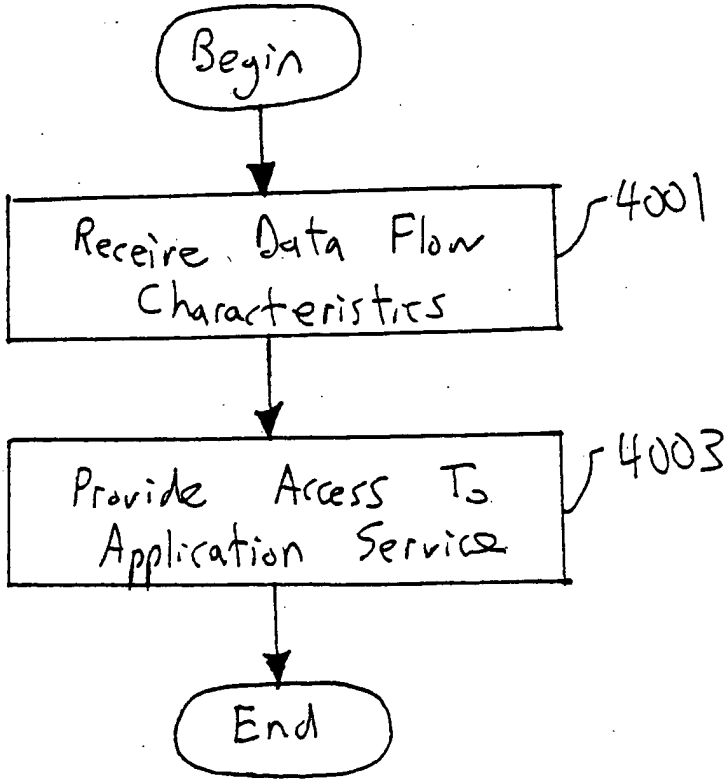



Figure 35